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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,628	10/15/2003	Jiang Liu	1372.55.PRC	2627

21901 7590 10/30/2006

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EXAMINER	
JACOB, MARY C	

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/605,628	LIU ET AL.	
	Examiner	Art Unit	
	Mary C. Jacob	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/26/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-37 have been presented for examination.

Information Disclosure Statement

2. The examiner respectfully requests that Applicant provide a date for the reference to Terrovitis. The reference has been considered, but a date for the reference could not be found by the Office.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 6, element 120.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "120" has been used to designate both "Displaying a Result of the Simulation" in Figure 6 and "Stimulus Supply" in Figure 7.

5. The drawings are objected to because Figure 8 is not discussed in the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities. Appropriate correction is required.

7. Paragraph 0015, line 15m "the stored date" appears to be a typographical error.

8. Paragraph 0064 appears to be incomplete.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 1 recites the limitation "the output spectrum" in line 5-6. There is insufficient antecedent basis for this limitation in the claim.

12. The term "range of values" in claim 4 is a relative term which renders the claim indefinite. The term "range of values" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

13. The terms "first range of values" and "second range of values" in claim 5 are relative terms which renders the claim indefinite. The terms "first range of values" and "second range of values" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

14. Claim 14 recites, "a simulated stimulus condition" in lines 2-3 and 4. It is unclear whether this limitation of "a simulated stimulus condition refers to the same "simulated stimulus condition" in Claim 13, or whether this is a new limitation of a "simulated stimulus condition".

15. Claim 14 recites the limitation "the stored data files" in line 8. There is insufficient antecedent basis for this limitation in the claim.

16. Claim 14 recites "the stored data files associated with the simulated stimulus condition" in lines 8-9. It is unclear whether or not the "stored data files" are intended to

be the same files as the "output files identified by the stimulus condition" in claim 1, lines 17-18, or separate output files specifically associated with the "simulated stimulus condition".

17. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the actual simulation of the frequency translation device. The claim is directed to "simulating the response of the frequency translation device" and further recites the steps of "establishing a simulated stimulus condition", "relating the simulated stimulus condition to the index file", "extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition" and "displaying a result of the simulation". This final step of "displaying a result of the simulation" is not preceded by any steps reciting the actual simulation of the frequency translation device or any steps reciting that the simulated stimulus condition is applied as input to the frequency translation device, thereby enabling a simulation. Therefore, it is unclear as to what results of a simulation are available for display and how the simulation is performed.

18. Claim 14 recites the phrase, "relating the simulated stimulus condition" in line 5, however, is unclear how the simulated stimulus condition is actually "related" to the index file. The term "related" is vague and indefinite.

19. Claim 14 recites the term "product of interest" in line 7, however, it is unclear what the "product of interest" actually is. For instance, is the "product of interest" the

product that occurs as a result of some simulated stimulus condition, or is it a "product of interest" for some other reason?

20. Claim 19 recites the limitation "the output spectrum" in lines 5-6. There is insufficient antecedent basis for this limitation in the claim.

21. Claim 19 recites the limitation "the stored data files" in line 23. There is insufficient antecedent basis for this limitation in the claim.

22. Claim 19 recites "the stored data files associated with the simulated stimulus condition" in lines 23-24. It is unclear whether or not the "stored data files" are intended to be the same files as the "output files identified by the stimulus condition" in lines 17-18, or separate output files specifically associated with the "simulated stimulus condition".

23. Claim 19 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the actual simulation of the frequency translation device. The claim, lines 19-25 are directed to "simulating a frequency translation device" and further recites the steps of "establishing a simulated stimulus condition", "relating the simulated stimulus condition to the index file", "extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition" and "displaying a result of the simulation". This final step of "displaying a result of the simulation" is not preceded by any steps reciting the actual simulation of the frequency translation device or any steps reciting that the simulated stimulus condition is applied as input to the frequency translation device,

thereby enabling a simulation. Therefore, it is unclear as to what results of a simulation are available for display and how the simulation is performed.

24. Claim 19 recites the phrase, "relating the simulated stimulus condition" in line 20, however, is unclear how the simulated stimulus condition is actually "related" to the index file. The term "related" is vague and indefinite.

25. Claim 19 recites the term "product of interest" in line 22, however, it is unclear what the "product of interest" actually is. For instance, is the "product of interest" the product that occurs as a result of some simulated stimulus condition, or is it a "product of interest" for some other reason?

26. Claim 20 recites the limitation "the output spectrum" in lines 6-7. There is insufficient antecedent basis for this limitation in the claim.

27. Claim 33 recites the term "the selected stimulus condition" in lines 3-4, however, it is unclear as to what a "selected stimulus condition" is or how a "stimulus condition" is "selected". Therefore, the claim is vague and indefinite.

28. Claim 33 recites the term "product of interest" in lines 5-6, however, it is unclear what the "product of interest" actually is. For instance, is the "product of interest" the product that occurs as a result of some simulated stimulus condition, or is it a "product of interest" for some other reason?

29. Claim 33 recites "the stored data files associated with the simulated stimulus condition" in lines 6-7. It is unclear whether or not the "stored data files" are intended to be the same files as the "output files identified by the stimulus condition" in claim 20,

lines 17-18, or separate output files specifically associated with the "simulated stimulus condition".

30. Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the actual simulation of the frequency translation device. The claim is directed to "simulating the response of the frequency translation device" and further recites the steps of selecting a stimulus condition, identifying and extracting the intermodulation product of interest from the stored data files and displaying a result of the simulation. This final step of "displaying a result of the simulation" is not preceded by any steps reciting the actual simulation of the frequency translation device or any steps reciting that the simulated stimulus condition is applied as input to the frequency translation device, thereby enabling a simulation. Therefore, it is unclear as to what results of a simulation are available for display and how the simulation is performed.

31. Claim 37 recites the limitation "the output spectrum" in line 6. There is insufficient antecedent basis for this limitation in the claim.

32. Claim 37 recites the term "the selected stimulus condition" in lines 19-20, however, it is unclear as to what a "selected stimulus condition" is or how a "stimulus condition" is "selected". Therefore, the claim is vague and indefinite.

33. Claim 37 recites the term "product of interest" in lines 21-22, however, it is unclear what the "product of interest" actually is. For instance, is the "product of interest"

the product that occurs as a result of some simulated stimulus condition, or is it a "product of interest" for some other reason?

34. Claim 37 recites "the stored data files associated with the simulated stimulus condition" in lines 22-23. It is unclear whether or not the "stored data files" are intended to be the same files as the "stored output files identified by the supplied stimulus condition" in lines 16-18, or separate output files specifically associated with the "simulated stimulus condition".

35. Claim 37 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the actual simulation of the frequency translation device. The claim is directed to "simulating a frequency translation device" and further recites the steps of selecting a stimulus condition, identifying and extracting the intermodulation product of interest from the stored data files and displaying a result of the simulation. This final step of "displaying a result of the simulation" is not preceded by any steps reciting the actual simulation of the frequency translation device or any steps reciting that the simulated stimulus condition is applied as input to the frequency translation device, thereby enabling a simulation. Therefore, it is unclear as to what results of a simulation are available for display and how the simulation is performed.

36. Due to the number of 35 U.S.C. 112, second paragraph rejections, the examiner has provided a number of examples of the claim deficiencies in the above rejection(s),

however, the list of rejections may not be inclusive. Applicant should refer to these rejections as examples of deficiencies and should make all necessary corrections to eliminate the 35 U.S.C. 112, second paragraph problems and place the claims in proper format.

Due to the vagueness and a lack of a clear definition of the terminology and phrases used in the specification and claims, the claims have been treated on their merits as best understood by the examiner.

Claim Rejections - 35 USC § 103

37. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

38. Claims 1-6, 13-15, 17, 19-25, 32-35 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lassesen ("Simulation and Measurement of Wireless Transmitter and Receiver Hardware", Master's Project Report, University of South Florida, sections 2.1.3, 2.1.4, 2.1.7, 3.6, 3.7, 4.1.6, 4.3, A.6, Appendix E, August 2000) in view of Benabe et al ("Simulation of a 915 MHz receiver Using the HP Advanced Design System", ARFTG Conference Digest, Computer-Aided Design and Test for High-Speed Electronics, pages 28-38, 1998).

39. As to Claims 1 and 20, Lassesen teaches: a method and system for characterizing a frequency translation device, the method comprising: a stimulus supply for supplying a stimulus condition as input to the frequency translation device (section 3.6, paragraph 1, last sentence; Figure 3-12, "VNA" and "SRC"); an output measurement device for measuring a plurality of intermodulation products in the output spectrum of the frequency translation device resulting from the stimulus condition input, the plurality of intermodulation products further comprising a plurality of sum intermodulation products and a plurality of difference intermodulation products (section 2.1.3, paragraph 1, sentence 4; section 2.1.7, paragraph 1, sentences 6-8, section 2.1.7, paragraph 2 and Tables 2-1, 2-21; section 3.6, paragraph 1, sentences 1-2; Figure 3-12, "SA"); establishing a predetermined file format (Table 2-1); storing the plurality of sum intermodulation products and the plurality of difference intermodulation products in a plurality of output files according to the prederermined file format (Table 2-1, figure 2-21 and descriptions; 2.1.7, paragraph 2; section 3.6, sentences 1-3; E.6, paragraphs 1-2, 6, Table E.1).

40. Lassesen does not expressly teach: establishing an index file to identify the stored output files identified by the stimulus condition.

41. Benabe et al teaches the use of Advanced Design System software (ADS) to simulate a 915 MHz receiver which provides the capability to obtain a more accurate prediction of intermodulation distortion or adjacent channel power that would be obtained through the use of actual filter characteristics, including the effects of non-ideal skirts and any parasitic pass-bands which may exist (Introduction, paragraphs 1 and 2). Benabe et al teaches that it is important to accurately describe the non-linearities in the frequency-translation stages, accomplished by including the intermodulation table for the mixer, wherein the appropriate sideband is selected and the intermodulation file is indexed and identified by the stimulus condition (Introduction, paragraph 3; section D, paragraph 1 and Figure 9, wherein "VAR, VAR2, RF_pow+0, RFfreq and LOfreq specify the input stimulus and therefore, identify the index file by stimulus condition).

42. Lassesen and Benabe et al are analogous art since they are both directed to the inclusion of intermodulation products in the simulation of a frequency translation device.

43. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the storage of the intermodulation products as taught by Lassesen to further include the establishment of an index file to identify the output files storing the intermodulation products as taught in Benabe et al since Benabe et al teaches the use of Advanced Design System software (ADS) to simulate a 915 MHz receiver which provides the capability to obtain a more accurate prediction of intermodulation distortion or adjacent channel power that would be obtained through the

use of actual filter characteristics, including the effects of non-ideal skirts and any parasitic pass-bands which may exist (Introduction, paragraphs 1 and 2) and further teaches that it is important to accurately describe the non-linearities in the frequency-translation stages, accomplished by including the intermodulation table for the mixer (section D, paragraph1).

44. As to Claims 2 and 21, Lassesen as modified by Benabe et al teach: wherein the frequency translation device is a mixer (Lassesen: section 3.6, sentences 1-3; Figure 3-12).

45. As to Claims 3 and 22, Lassesen as modified by Benabe et al teach: wherein supplying the stimulus condition further comprises supplying a sweeping stimulus condition (Lassesen: Appendix E, paragraphs 1 and 6; Table E1, "Source"; Benabe et al: Introduction, paragraph 2, sentence 4; Section B, paragraph 1, sentences 1 and 2, Figure 3; Section C, paragraph 1, sentences 1-2, Figures 7 and 8).

46. As to Claim 4, Lassesen as modified by Benabe et al teach: wherein supplying the sweeping stimulus condition further comprises supplying an input signal at a predetermined power and frequency (Benabe et al: page 30, lines 1-3) and establishing a local oscillator input at a predetermined power and frequency (Benabe et al: page 29, paragraph 1, lines 3-5, Table 1, "Port2"), and stepping the input signal and local oscillator power through a predetermined range of values (Benabe et al: Figure 3 and description, Section B, paragraph 1; Figures 7 and 8 and descriptions, Section C, paragraph 1).

47. As to Claim 5, Lassesen as modified by Benabe et al teach: wherein supplying the sweeping stimulus condition further comprises supplying an input signal at a first frequency (Benabe et al: page 29, paragraph 1, lines 2-3; page 30, line 1) and a local oscillator input at al second frequency (Benabe et al: page 29, paragraph 1, lines 3-5), stepping the input signal power level through a predetermined first range of values and stepping the local oscillator power level through a predetermined second range of values (Benabe et al: Section C, paragraphs 1 and 2, Figures 7 and 8).

48. As to Claims 6 and 25, Lassesen as modified by Benabe et al teach: wherein measuring the plurality of intermodulation products further comprises measuring the amplitude of the intermodulation products (Lassesen: E.6, paragraph 1, sentence 1).

49. As to Claims 13 and 32 Lassesen as modified by Benabe et al teach: simulating the response of the frequency translation device to a simulated stimulus condition (Lassesen: Appendix E, paragraphs 1 and 6; Table E1, "Source"; E.6, paragraph 2; Figure 3-12, "VNA" and "SRC").

50. As to Claims 14 and 33, Lassesen as modified by Benabe et al teach: wherein simulating the response of the frequency translation device to a simulated stimulus condition further comprises: establishing a simulated stimulus condition, a simulated stimulus condition selector (Lassesen: Appendix E, paragraphs 1 and 6; Table E1, "Source"; E.6, paragraph 2; Figure 3-12, "VNA" and "SRC"); relating the simulated stimulus condition to the index file and extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition (Benabe et al: Introduction, paragraph 3; section D, paragraph 1 and Figure 9, wherein "VAR,

VAR2, RF_pow+0, RFfreq and LOfreq specify the input stimulus and therefore, identify the index file by stimulus condition); and displaying a result of the simulation (Benabe et al: Figure 10).

51. As to Claims 15 and 34, Lassesen as modified by Benabe et al teach: wherein the simulated stimulus condition further comprises a simulated sweeping stimulus condition (Lassesen: Appendix E, paragraphs 1 and 6; Table E1, "Source"; Benabe et al: Introduction, paragraph 2, sentence 4; Section B, paragraph 1, sentences 1 and 2, Figure 3; Section C, paragraph 1, sentences 1-2, Figures 7 and 8).

52. As to Claims 17 and 35, Lassesen as modified by Benabe et al teach: wherein displaying a result of the simulation further comprises displaying a graphical result (Benabe et al: Figure 10).

53. As to Claim 23, Lassesen as modified by Benabe et al teach: wherein the stimulus supply further comprises a plurality of signal generators (Lassesen: Figure 3-12, "VNA" and "SRC").

54. As to Claim 24, Lassesen as modified by Benabe et al teach: wherein the output measurement device is a spectrum analyzer (Lassesen: Figure 3-12, "SA").

55. As to Claims 19 and 37, Lassesen teaches: a method and system for characterizing a frequency translation device, the method comprising: a stimulus supply for supplying a stimulus condition as input to the frequency translation device (section 3.6, paragraph 1, last sentence; Figure 3-12, "VNA" and "SRC"); an output measurement device for measuring a plurality of intermodulation products in the output

spectrum of the frequency translation device resulting from the stimulus condition input, the plurality of intermodulation products further comprising a plurality of sum intermodulation products and a plurality of difference intermodulation products (section 2.1.3, paragraph 1, sentence 4; section 2.1.7, paragraph 1, sentences 6-8, section 2.1.7, paragraph 2 and Tables 2-1, 2-21; section 3.6, paragraph 1, sentences 1-2; Figure 3-12, "SA"); establishing a predetermined file format (Table 2-1); storing the plurality of sum intermodulation products and the plurality of difference intermodulation products in a plurality of output files according to the predetermined file format (Table 2-1, figure 2-21 and descriptions; 2.1.7, paragraph 2; section 3.6, sentences 1-3; E.6, paragraphs 1-2, 6, Table E.1); establishing a simulated stimulus condition, a simulated stimulus condition selector, (Appendix E, paragraphs 1 and 6; Table E1, "Source"; E.6, paragraph 2; Figure 3-12, "VNA" and "SRC").

56. Lassesen does not expressly teach: establishing an index file to identify the stored output files identified by the stimulus condition; relating the simulated stimulus condition to the index file and extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition; and displaying a result of the simulation.

57. Benabe et al teaches the use of Advanced Design System software (ADS) to simulate a 915 MHz receiver which provides the capability to obtain a more accurate prediction of intermodulation distortion or adjacent channel power that would be obtained through the use of actual filter characteristics, including the effects of non-ideal skirts and any parasitic pass-bands which may exist (Introduction, paragraphs 1 and 2).

Benabe et al teaches that it is important to accurately describe the non-linearities in the frequency-translation stages, accomplished by including the intermodulation table for the mixer, wherein the appropriate sideband is selected and the intermodulation file is indexed and identified by the stimulus condition (Introduction, paragraph 3; section D, paragraph 1 and Figure 9, wherein "VAR, VAR2, RF_pow+0, RFfreq and LOfreq specify the input stimulus and therefore, identify the index file by stimulus condition); relating the simulated stimulus condition to the index file and extracting the intermodulation product of interest from the stored data files associated with the simulated stimulus condition (Introduction, paragraph 3; section D, paragraph 1 and Figure 9, wherein "VAR, VAR2, RF_pow+0, RFfreq and LOfreq specify the input stimulus and therefore, identify the index file by stimulus condition); and displaying a result of the simulation (Figure 10).

58. Lassesen and Benabe et al are analogous art since they are both directed to the inclusion of intermodulation products in the simulation of a frequency translation device.

59. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the storage of the intermodulation products as taught by Lassesen to further include the establishment of an index file to identify the output files storing the intermodulation products, relating the simulated stimulus condition to the index file, extracting the intermodulation product of interest from the stored data files and displaying a result of the simulation as taught in Benabe et al since Benabe et al teaches the use of Advanced Design System software (ADS) to simulate a 915 MHz receiver which provides the capability to obtain a more accurate prediction of

intermodulation distortion or adjacent channel power that would be obtained through the use of actual filter characteristics, including the effects of non-ideal skirts and any parasitic pass-bands which may exist (Introduction, paragraphs 1 and 2) and further teaches that it is important to accurately describe the non-linearities in the frequency-translation stages, accomplished by including the intermodulation table for the mixer (section D, paragraph1).

60. Claims 7 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lassesen as modified by Benabe et al as applied to claims 1 and 20 above, and further in view of Pike et al (US Patent 5,089,782).

61. Lassesen as modified by Benabe et al teach measuring a plurality of intermodulation products in the output spectrum of a frequency translation device resulting from a stimulus condition input and using a Vector Network Analyzer as a component in the test setup for the measurements.

62. Lassesen as modified by Benabe et al do not expressly teach measuring the amplitude and phase of the intermodulation products.

63. Pike et al teaches a method and apparatus for swept frequency measurements of harmonics produced by non-linear RF devices using a vector network analyzer that dramatically speeds the linear and non-linear amplifier and mixer measurements on a device under test (column 1, lines 60-68) wherein the amplitude and phase of intermodulation products are measured and displayed (column 4, lines 55-66; column 25, lines 58-66).

64. Lassesen as modified by Benabe et al and Pike et al are analogous art since they are all directed to the measurements of non-linear characteristics of a frequency translation device.

65. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the measurements of intermodulation products in the output spectrum of a frequency translation device as taught by Lassesen as modified by Benabe et al to include measuring the amplitude and phase of the intermodulation products as taught by Pike et al since Pike et al teaches a method and apparatus for swept frequency measurements of harmonics produced by non-linear RF devices using a vector network analyzer that dramatically speeds the linear and non-linear amplifier and mixer measurements on a device under test (column 1, lines 60-68).

66. Claims 18 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lassesen as modified by Benabe et al as applied to claims 14 and 36 above, and further in view of Pratap ("Getting Started with MATLAB, A Quick Introduction for Scientists and Engineers", Saunders College Publishing, pages 3-5, 1996).

67. Lassesen as modified by Benabe et al teach wherein displaying a result of the simulation further comprises displaying a graphical result (Benabe et al: Figure 10) and teach that further analysis of simulation data includes plotting the results in MathCad or an alternate software tool that can facilitate plotting (Lassesen: A.6).

68. Lassesen as modified by Benabe et al do not expressly teach wherein the graphical result is three-dimensional.

69. Pratap teaches MATLAB is a software package of high-performance numerical computation and visualization that provides an interactive environment, providing tools for data analysis, signal processing and other types of scientific computations, and includes functions for 3-D graphics and animation (page 3) that is close in aim and scope to MathCad, but further includes a programming environment which MathCad lacks (section 1.2, lines 12-13).

70. Lassesen as modified by Benabe et al and Pratap are analogous art since they are all directed to the plotting of simulation results for visual analysis.

71. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the plotting of results in MathCad or an alternate software tool as taught in Lassesen as modified by Benabe et al to further include the use of a software tool such as MATLAB that enables the 3-D plotting of simulation results since Pratap teaches MATLAB is a software package of high-performance numerical computation and visualization that provides an interactive environment, providing tools for data analysis, signal processing and other types of scientific computations that is close in aim and scope to MathCad, but further includes a programming environment which MathCad lacks (section 1.2, lines 12-13).

Conclusion

72. Any indication of allowability of the claims rejected under 35 USC 112 2nd paragraph, but not on prior art is being held in abeyance pending the manner in which applicant amends or responds to this rejection under 35 USC 112 2nd paragraph.

73. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

74. Yang (US Patent 7,016,823) teaches simulating a mixer having an RF port, a LO port, and an IF port, and teaches that at present, mixers are simulated utilizing mixer Inter-Modulation Table (IMT) methods. The existing mixer IMT models map each input frequency to multiple output frequencies using a table look-up approach. The mixer IMT data can be measured with a spectrum analyzer, or be generated with a nonlinear circuit simulator for any particular mixer design.

75. Feldmann et al (US Patent 5,867,416) teaches performing frequency domain analysis using compressed matrix storage to reduce the computation and storage requirements associated with processing a system of harmonic balance equations.

76. Evans et al (US Patent 4,028,622) teaches measuring low intensity intermodulaton distortion products.

77. Alker (US Patent 3,663,954) teaches a system for measuring the nonlinearity of a signal-transmitting network or other test circuit designed to pass a predetermined frequency band.

78. Dunleavy et al ("Mixer Measurements using Network and Spectrum Analysis", 48th Automatic RF Techniques Group Conference, December 1996) teaches methods for measurement of mixer port impedance, isolation and conversion loss.

79. Dunleavy et al ("Characterization and Simulation of a 915MHz Wireless Receiver", 50th Automatic RF Techniques Group Conference, December 1997) teaches the characterization and simulation of a 915MHz receiver subsystem using a versatile test bench and CAE environment.

80. Narhi ("Frequency-Domain Analysis of Strongly Nonlinear Circuits Using a Consistent Large-Signal Model", IEEE Transactions on Microwave Theory and Techniques, Vol. 44, No. 2, February 1996) teaches an analysis method that extends the applicability of the frequency-domain methods to strongly nonlinear circuits, and teaches a frequency table and an intermodulation table.

81. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C. Jacob whose telephone number is 571-272-6249. The examiner can normally be reached on M-F 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10/27/06

PAUL RODRIGUEZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

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Mary C. Jacob
Examiner
AU2123

MCJ
10/19/06